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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/668,172

09/24/2003

I-Kai Pan

PANI3003/EM

4035

23364

7590

10/24/2005

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EXAMINER

FINEMAN, LEE A

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/668,172	Applicant(s) PAN ET AL.	
	Examiner Lee Fineman	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/24/03 & 8/16/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/16/05</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is in response to an amendment filed 16 August 2005 in which claims 1, 3 and 7 were amended, claim 9 was added, and claim 8 was cancelled. Claims 1-3, 5, 7 and 9 are pending.

#### ***Claim Objections***

1. Claim 5 is objected to because of the following informalities: The limitation "the convex pillar lens array" lacks antecedent basis. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drain et al., US 2003/0206256 A1 in view of Wang, US 2002/0041441 A1 and Takahashi et al., US 4,729,631.

Regarding claims 1, 3 and 5, Drain et al. disclose in figs. 7 and 8 a composite micro-structured sheet for diffusing and condensing light comprising a substrate (16) having a top surface and a bottom surface (figs. 7 and 8), wherein a plurality of straight trenches (76) is formed on the bottom surface for diffusing the incident light on the bottom surface, and a

Art Unit: 2872

plurality of triangular-type protrusions (64) is formed on the top surface for raising the semi-brightness angle of the light that has passed through the bottom surface (page 3, section [0038]). Drain et al. further disclose on page 4, section [0057] that many different shapes can be used for the trenches/protrusions but does not explicitly state wherein the plurality of straight trenches has an arc cross-section; wherein each straight trench with an arc cross-section is constructed of a concave pillar lens array; and wherein the size and focal length of the lenses of the concave pillar lens array are all the same. Wang teaches in figures 1-3, conventional shapes for microstructure straight trenches, including a plurality of straight trenches with an arc cross-section (fig. 3); wherein each straight trench with an arc cross-section is constructed of a concave pillar lens array (fig. 3); and wherein the size and focal length of the lenses of the concave pillar lens array are all the same (fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the straight trenches of Drain et al. have an arc cross-section and be constructed of a concave pillar lens array as suggested by Wang to provide different light directing characteristics for different brightness enhancement. Further, while Wang may suggest in figs. 13A and 13B an included angle of the trench/protrusions, neither Drain et al. nor Wang explicitly state wherein an included angle between each straight trench with an arc cross-section and the respective triangle-type protrusion ranges from 30 to 90 degrees. Takahashi et al. teaches in figs. 10-12, different composite micro-structured sheet for diffusing with trenches and triangle-type protrusions wherein an included angle between each straight trench and the respective triangle-type protrusion ranges from 30 to 90 degrees (90 degrees, figs. 10-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the sheet of Drain in view of Wang as set forth above also have an included angle as

Art Unit: 2872

suggested by Takahashi et al. to obtain better horizontal diffusing characteristics (Takahashi, column 7, line 3).

Regarding claims 2, Drain et al. further disclose wherein the substrate is made of polymethyl methacrylate (PMMA) or polycarbonate (PC) (page 4, section [0050], line 7).

Regarding claims 7, Drain et al. further disclose wherein the triangle-type protrusions are parallel to each other (see fig. 5).

Regarding claims 9, Drain et al. in view of Wang and Takahashi et al. as set forth above disclose the claimed invention except wherein the included angle is 30 degrees. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the included angle be 30 degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would have been motivated to make the included angle be 30 degrees for the purpose of providing specific light directing characteristics for specific brightness enhancement. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

#### *Response to Arguments*

4. Applicant's arguments with respect to claims 1-3, 5, 7 and 9 have been considered but are moot in view of the new ground(s) of rejection.

5. It is noted by the Examiner that the specification and drawing objections made in the previous Office Action have been withdrawn due to amendment by the Applicant.

*Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LAF

October 19, 2005



MARK A. ROBINSON  
PRIMARY EXAMINER